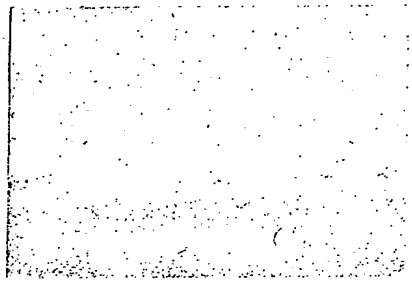

GLV 6.0

Summary

The purpose of the GLV 6.0 mask set is to test the feasibility of zero order with a GLV style device (ribbons and gaps of roughly equal widths). This device was not meant to be sealed. There are four mask steps, Via1 (contact from gap Al to substrate), Ribbon, Post, and Thick Al. The mask set has been designed for the CIS Ultratech stepper and the die size and layout is compatible with the Rover package. The number of test structures has been kept to a minimum for rapid layout. There are no test modules; all testable structures are in the main array. There are 11 superpixels, consisting of 60 25.5 um pixels each. The superpixels are electrically isolated. There are a limited number of other test structures, designed to test contact resistances and gap and ribbon reflectivity. The contact resistance test structures are intended to be bondable to the Rover package.

Main Array

Superpixel #	Name	Length (um)	Width (um)	Redundancy	Layout name
1	DCP1	200	4.375	3	xTestDCP1L200
2	DCM3	200	3.875	3	xTestDCM3L200
3	DCM2	200	4.000	3	xTestDCM2L200
4	DCM1	200	4.125	3	xTestDCM1L200
5	DC0	200	4.250	3	xTestDC0L200
6	DCP1	200	4.375	3	xTestDCP1L200
7	DCP2	200	4.500	3	xTestDCP2L200
8	DCP3	200	4.625	3	xTestDCP3L200
9	L300	300	4.375	1, centered	xTestDCP1L300
9		150	4.375	2, edges	
10	L500	500	4.375	1, centered	xTestDCP1L500
10		50		2, edges	
11	DCP1	200	4.375	3	xTestDCP1L200

Substrate Contact

4 contact pads are located around the array.

Test Structures

Reflectivity

Ribbon Reflectivity

Gap Reflectivity

Contact Resistance

2 bondable pads with 10 vias

2 bondable pads with 1 via

These 4 structures are arranged in a line so that 4-point substrate resistance measurements may be made.

Proposal for Short Loop for Zero Order:

- abandon the standard sealing approach
- use hand assembled Rovers for on-the-wall display testing
- 4 mask layers:
  - post
  - Ribbon
  - M2 – thick Al
  - Via – gap contact
- field mask (thin metal)

Process:

- Silicon wafer start
- oxide/SiN 400Å
- Sac poly deposition 8500Å
- Post mask
- Sac poly etch
- SiN ribbon deposition
- Ribbon photo
- SiN ribbon etch through to sac poly and substrate(ie ribbon and etch stop)
- M2 deposition 3kÅ Al sp
- M2 photo
- M2 etch
- Sac poly partial etch with undercut – SF6 or XeF2?
- Via photo
- Via etch
- Thin Al deposition (evap?) 500Å
- contact anneal?